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| (51) International Patent Classification ⁶ : C12N 15/12, C07K 14/705, A61K 38/17, C12N 5/10, C12Q 1/37, C12N 9/72, 15/85 | A3 | (11) International Publication Number: WO 98/55508 (43) International Publication Date: 10 December 1998 (10.12.98) |
| (21) International Application Number: PCT/JP98/02445 (22) International Filing Date: 3 June 1998 (03.06.98) (30) Priority Data: 9/144948 3 June 1997 (03.06.97) JP (71) Applicants (for all designated States except US): SAGAMI CHEMICAL RESEARCH CENTER [JP/JP]; 4-1, Nishi-Ohnuma 4-chome, Sagamihara-shi, Kanagawa 229-0012 (JP). PROTEGENE INC. [JP/JP]; 2-20-3, Naka-cho, Meguro-ku, Tokyo 153-0065 (JP). (72) Inventors; and (75) Inventors/Applicants (for US only): KATO, Seishi [JP/JP]; 3-46-50, Wakamatsu, Sagamihara-shi, Kanagawa 229-0014 (JP). SEKINE, Shingo [JP/JP]; Remonzu 101, 2-8-15, Atago, Ageo-shi, Saitama 362-0034 (JP). YAMAGUCHI, Tomoko [JP/JP]; 5-13-11, Takasago, Katsushika-ku, Tokyo 125-0054 (JP). (74) Agents: AOYAMA, Tamotsu et al.; Aoyama & Partners, IMP Building, 3-7, Shiromi 1-chome, Chuo-ku, Osaka-shi, Osaka 540-0001 (JP). | | (81) Designated States: AU, CA, JP, MX, US, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i> (88) Date of publication of the international search report: 25 March 1999 (25.03.99) |
| (54) Title: HUMAN PROTEINS HAVING TRANSMEMBRANE DOMAINS AND DNAs ENCODING THESE PROTEINS (57) Abstract Proteins comprising any of the amino acid sequences of SEQ ID NOS: 1 to 18 and DNAs encoding said proteins and comprising any of the nucelotide sequences of SEQ ID NOS: 19 to 36 are provided. | | |

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INTERNATIONAL SEARCH REPORT

International Application No

PC1/JP 98/02445

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 C12N15/12 C07K14/705 A61K38/17 C12N5/10 C12Q1/37
C12N9/72 C12N15/85

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 C12N C07K A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|--|-----------------------|
| A | KYTE J. ET AL.: "A SIMPLE METHOD FOR DISPLAYING THE HYDROPATHIC CHARACTER OF A PROTEIN" JOURNAL OF MOLECULAR BIOLOGY, vol. 157, no. 1, 5 May 1982, pages 105-132, XP000609692 cited in the application | |
| A | LIBERT F. ET AL.: "SELECTIVE AMPLIFICATION AND CLONING OF FOUR NEW MEMBERS OF THE G PROTEIN-COUPLED RECEPTOR FAMILY" SCIENCE, vol. 244, 5 May 1989, pages 569-572, XP002041588 | |



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

* Special categories of cited documents :

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"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

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Date of the actual completion of the international search

22 September 1998

Date of mailing of the international search report

26.01.99

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Macchia, G

INTERNATIONAL SEARCH REPORT

International Application No.

PCT/JP 98/02445

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|---|-----------------------|
| A | MILLS A. AND DUGGAN M.J.: "ORPHAN SEVEN TRANSMEMBRANE DOMAIN RECEPTORS: REVERSING PHARMACOLOGY" TRENDS IN BIOTECHNOLOGY, vol. 12, February 1994, pages 47-49, XP002078287 | |
| A | --- Database EMBL, entry Emest7:HS010272 Accession number N39010 25 January 1996 99% identity with Seq.ID:19 nt.647-1146. XP002078288 see the whole document | 2-4 |
| A | --- Database EMBL, entry Emest9:HS204207 Accession number H57204 7 October 1995 96% identity with Seq.ID:19 nt.1-437. XP002078292 cited in the application see the whole document ----- | 2-4 |

INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP 98/02445

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-6 : all partially (see subject 1, extra sheet)

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

1. Claims: 1-6 all partially.

A protein comprising an aminoacid sequence as in Seq.ID:1, encoding DNA, as in Seq.ID:19 and 37, related expression vector and transformed eukaryotic cell.

2. Claims: 1-6 all partially.

As invention 1 but concerning Seq.ID:2, 20 and 38.

3. Claims: 1-6 all partially.

As invention 1 but concerning Seq.ID:3, 21 and 39.

4. Claims: 1-6 all partially.

As invention 1 but concerning Seq.ID:4, 22 and 40.

5. Claims: 1-6 all partially.

As invention 1 but concerning Seq.ID:5, 23 and 41.

6. Claims: 1-6 all partially.

As invention 1 but concerning Seq.ID:6, 24 and 42.

7. Claims: 1-6 all partially.

As invention 1 but concerning Seq.ID:7, 25 and 43.

8. Claims: 1-6 all partially.

As invention 1 but concerning Seq.ID:8, 26 and 44.

9. Claims: 1-6 all partially.

As invention 1 but concerning Seq.ID:9, 27 and 45.

10. Claims: 1-6 all partially.

As invention 1 but concerning Seq.ID:10, 28 and 46.

11. Claims: 1-6 all partially.

As invention 1 but concerning Seq.ID:11, 29 and 47.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

12. Claims: 1-6 all partially.

As invention 1 but concerning Seq.ID:12, 30 and 48.

13. Claims: 1-6 all partially.

As invention 1 but concerning Seq.ID:13, 31 and 49.

14. Claims: 1-6 all partially.

As invention 1 but concerning Seq.ID:14, 32 and 50.

15. Claims: 1-6 all partially.

As invention 1 but concerning Seq.ID:15, 33 and 51.

16. Claims: 1-6 all partially.

As invention 1 but concerning Seq.ID:16, 34 and 52.

17. Claims: 1-6 all partially.

As invention 1 but concerning Seq.ID:17, 35 and 53.

18. Claims: 1-6 all partially.

As invention 1 but concerning Seq.ID:18, 36 and 54.